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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
RAMIREZ, DELIA M	

ART UNIT	PAPER NUMBER
1652	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/800,946	XU ET AL.	
	Examiner	Art Unit	
	Delia M. Ramirez	1652	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 June 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3,6-13,15 and 16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,6-13,15 and 16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *6/7/07* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Status of the Application

Claims 1-3, 6-13, 15-16 are pending.

It is noted that the examination of the instant application has been assigned to a different Examiner in Group Art Unit 1652.

Applicant's amendments to the claims, the specification, the drawings, and remarks as submitted in a communication filed on 6/7/2007 are acknowledged.

New grounds of rejection are being introduced in this Office action. Thus, the finality of the previous Office action is hereby withdrawn.

Claims 1-3, 6-13 and 15-16 are at issue and are being examined herein.

Rejections and/or objections not reiterated from previous office actions are hereby withdrawn.

Specification

1. The abstract and title as originally filed are objected to for the following reasons. The abstract and title refer to a method for altering the cleavage specificity of a type IIG restriction endonuclease. However, the claims are directed to a method for creating a functionally active chimeric type IIG restriction endonuclease. Appropriate correction is required.

2. The specification is objected for failing to comply with sequence rules. Applicant is required to insert sequence identifiers in front of sequences referred to in the specification. See page 35, lines 4-5. In addition, new Figure 9 displays several sequences, however, neither the figure nor the Brief Description of the Drawings section provide a sequence identifier for the sequences disclosed in Figure 9. Also, appendix A as submitted on 10/18/2006 requires a sequence identifier which corresponds to the sequence disclosed. See particularly 37 CFR 1.821(a)-(d). Appropriate correction is required.

3. The specification is objected to for the following reasons. The first paragraph of the specification as originally filed does not provide the current status of the related applications cited. Appropriate correction is required.

4. A previous new matter objection to the specification was made with regard to the amendment of page 34 submitted on 11/17/2006. The previous Examiner of record indicated that the introduction of motif X to the chimeric enzyme was not supported by the specification as originally filed. Applicant argues that support for this amendment was found in specific sections of the specification and that the teachings of Malone also provide support for these changes. Upon review of the specification and the teachings of Malone, the Examiner has concluded that support is found for including motif X. Specifically, the specification on page 34 indicates that the chimeric enzyme comprises the N terminal region of BpmI that comprises the catalytic domain and part of the methylase, and the C terminal region of BsgI that comprises part of the methylase domain and the specificity domain. Since the methylase domain of gamma methylases according to Malone comprise motifs X, I, II, III, IV, V, VI, VII, VIII, in that order, one of skill in the art would understand that the chimeric enzyme contains motif X of the methylase domain of BpmI and not motif X of the methylase domain of BsgI. Thus, the previous new matter objection made is hereby withdrawn.

Priority

5. Acknowledgment is made of a claim for domestic priority under 35 U.S.C. 120 or 121 to US application No. 10/150,028 filed on 05/17/2002 and 09/693,146 filed on 10/20/2000.

6. A method for modifying the specificity of BpmI was first suggested in US application No. 09/693,146 filed on 10/20/2000.

Drawings

7. The drawings submitted on 6/7/2007 have been reviewed and are accepted for examination purposes.

Claim Objections

8. Claim 1 is objected to due to the recitation of "ligating a first DNA sequence and a second DNA sequence to form a recombinant DNA ....the second DNA sequence comprises a DNA segment" for the following reasons. DNA sequences, as known in the art, are graphical representations of the order in which nucleotides are arranged in a nucleic acid molecule. Therefore, sequences do not make nucleic acids or comprise DNA segments. For clarity and consistency with language used in the art, it is suggested the term be amended to recite "ligating a first DNA and a second DNA to form a recombinant DNA, wherein (i) the first DNA comprises a DNA segment...., and (ii) the second DNA comprises a DNA segment encoding....such that the ligation occurs between the methylase domain of (i) and (ii) to form a fusion junction in the chimeric endonuclease; and (b) transforming....". Appropriate correction is required.

9. Claim 1 is objected to due to the recitation of "methylase domain for a first type IIG restriction endonuclease". It should be amended to recite "methylase domain of a first type IIG restriction endonuclease". Appropriate correction is required.

10. Claim 3 is objected to due to the recitation of "fusion junction occurs proximate to or within (i) a conserved amino acid sequence in a methylase motif". For clarity and consistency with commonly used claim language, it is suggested the term be amended to recite, for example, "fusion junction occurs next to or within (i) a conserved region in a methylase motif". Appropriate correction is required.

11. Claim 3 is objected to due to the recitation of "group consisting of motifs X... or VIII". The term "or" should be changed to "and". Appropriate correction is required.

12. Claim 6 is objected for not complying with sequence rules. The sequence "NPPY" requires a sequence identifier. See particularly 37 CFR 1.821(a). Appropriate correction is required.

13. Claim 6 is objected to due to the recitation of "wherein the fusion junction is located between the sequence encoding motif III and NPPY in motif IV". For clarity and consistency with commonly used claim language, it is suggested the term be amended to recite, for example, "wherein the fusion junction is located between motif ....and ....". Appropriate correction is required.

14. Claim 7 is objected to due to the recitation of "ligation occurs by means of a linker sequence attached to each of the N-terminal portion of the methylase...". For the reasons indicated above regarding the term "sequence", it is suggested the term "linker sequence" be amended to recite "linker". Appropriate correction is required.

15. Claim 11 is objected to due to the recitation of "wherein the first and second fragments of DNA". It is suggested that the term be amended to recite "wherein the first and second DNA fragments". Appropriate correction is required.

16. Claim 12 is objected to due to the recitation of "ligating the first and second DNA fragments at a site proximate to or within a site corresponding..." For clarity and consistency with commonly used claim language, it is suggested the term be amended to recite, for example, "ligating the first and second DNA fragments at a site next to or within a site corresponding..." Appropriate correction is required.

17. Claim 15 is objected to due to the recitation of "at least one of the first DNA fragment and the second DNA fragment has a linker". While the Examiner has understood that the claim is directed to the method of claim 11 with the added limitation that the two fragments be joined by a linker, it is suggested that for clarity and consistency with commonly used claim language, the claim be amended to recite, for example, "a method according to claim 11 wherein the first and second DNA fragments are joined by a linker", or similar. Appropriate correction is required.

Claim Rejections - 35 USC § 112, Second Paragraph

18. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

19. Claims 2-3, 6-8, 10, 12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

20. Claim 2 is indefinite in the recitation of "introducing a mutation into the cleavage domain to enhance the viability of the transformed host cell" for the following reasons. Claim 1, from which claim 2 depends, is directed to a method for creating a functional type IIG restriction endonuclease. If, as required by claim 2, only the cleavage domain is mutated, the endonuclease of claim 1 is no longer functional since the mutation would have to inactivate the cleaving activity of the endonuclease to enhance the viability of the host cell. For examination purposes, no patentable weight will be given to this limitation. Thus, claim 1 and 2 will be considered duplicates. Correction is required.

21. Claim 3 is indefinite in the recitation of "fusion junction occurs proximate to or within....(ii) a boundary between the methylase domain and the specificity domain, wherein the methylase motif is selected from the group consisting of motifs X, I, II, III, IV, V, VI, VII, or VIII" for the following reasons. Claim 1, from which claim 3 depends, requires the first DNA to encode part of a methylase, and the second DNA to encode part of another methylase and the specificity domain. For a fusion junction to occur next to or within the boundary between the methylase domain and the specificity domain, the first DNA would have to comprise the entire coding region of the methylase, whereas the second DNA would not code for any methylase. In addition, the motifs recited are indefinite because one cannot determine what motifs X, I, II, III, IV, V, VI, VII, or VIII are (i.e., structures). While Figure 9 shows the alignments which led to the assertion that gamma methylases have these motifs (Figure 1C of Malone et al.), it is noted that this figure does not provide the actual sequences for these motifs and in most cases, it is

unclear as to which amino acids are required in each position (with the exception of those highlighted in black). In some cases it is impossible to even determine where one motif starts and/or where does it end (e.g., motif V and VI). Since neither the specification nor the art provides the structures of these motifs, one cannot reasonably determine where the junction should be. For examination purposes, no patentable weight will be given to the term. Claim 3 will be considered a duplicate of claim 1. Correction is required.

22. Claim 6 is indefinite in the recitation of "sequence encoding motif III" since the structure of motif III is undefined for the reasons indicated above regarding claim 3. For examination purposes, no patentable weight will be given to the term. Claim 6 will be considered a duplicate of claim 1. Correction is required.

23. Claim 7 is indefinite in the recitation of "linker sequence attached to each of the N-terminal portion of the methylase domain and the C-terminal portion of the methylase domain on the first and second DNA segment" for the following reasons. The claim as written requires a linker between the catalytic domain and the N-terminal portion of the methylase in the first segment of the chimeric enzyme (encoded by the first DNA), and a linker between the C-terminal portion of the methylase and the specificity domain in the second segment (encoded by the second DNA). This is unclear because linkers in those locations would not allow ligation between the two portions of the chimeric enzyme. If the intended limitation is a linker joining the two portions, the claim should be amended to indicate, for example, that ligation occurs by a linker between the first and second DNAs. Correction is required.

24. Claim 8 is indefinite in the recitation of "wherein the recombinant DNA encodes an active methylase domain" for the following reasons. Claim 1, from which claim 8 depends, is directed to a method for creating a functionally active type IIG restriction endonuclease. Since the endonuclease also required the methylase domain, it is unclear as to how the endonuclease can be functionally active if the methylase domain is inactive. Also, assuming that the term "type IIG restriction endonuclease" is

intended to encompass solely the cleaving activity and not the methylase activity, it is noted that it is unclear as to how one could create this endonuclease in a transformed host cell if the methylase activity is absent. One of skill in the art would expect the host cell to be unviable if the methylase activity is lacking. For examination purposes, no patentable weight will be given to this term. Thus, claim 8 will be considered a duplicate of claim 1. Correction is required.

25. Claim 10 is indefinite in the recitation of "and the second type IIG endonuclease is characterized by a bioinformatics search of a microbial sequence database" because it is unclear what this term means. One cannot determine how an enzyme can be characterized by a search in a database, or how a search in a database is a characteristic of an enzyme. No patentable weigh will be given to this term. Claim 10 will be considered a duplicate of claim 1. Correction is required.

26. Claim 12 is indefinite in the recitation of "further comprising ligating the first and second DNA fragments at a site corresponding to a conserved motif in the methylase domain" for the following reasons. Claim 11, from which claim 12 depends, also requires that the first DNA fragment encodes all of the methylase domain of a first type IIG restriction endonuclease. Therefore, the limitation of claim 12 is unclear and confusing because no ligation at a site corresponding to a conserved motif in the methylase domain can occur if the first DNA fragment encodes all of the methylase domain of a first type IIG restriction endonuclease. For examination purposes, it will be assumed that claim 12 is directed to the method of claim 11, wherein the first DNA fragment encodes the cleavage domain and a portion of the methylase domain of a first type IIG restriction endonuclease, and wherein the method further comprises ligating the first and second DNA fragments at a site corresponding to a conserved motif in the methylase domain". Correction is required.

Claim Rejections - 35 USC § 112, First Paragraph

27. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

28. Claims 1-3, 6-13, 15-16 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claims 1-3, 6-13, 15-16 are directed to a method of creating functionally active chimeric type IIG restriction endonucleases in a transformed host cell, wherein said method requires combining DNAs encoding a genus of cleavage domains, gamma methylase domains, and specificity domains. See Claim Rejections under 35 USC 112, second paragraph for claim interpretation.

In *University of California v. Eli Lilly & Co.*, 43 USPQ2d 1938, the Court of Appeals for the Federal Circuit has held that "A written description of an invention involving a chemical genus, like a description of a chemical species, 'requires a precise definition, such as by structure, formula, [or] chemical name,' of the claimed subject matter sufficient to distinguish it from other materials". As indicated in MPEP § 2163, the written description requirement for a claimed genus may be satisfied through sufficient description of a representative number of species by actual reduction to practice, reduction to drawings, or by disclosure of relevant, identifying characteristics, i.e., structure or other physical and/or chemical properties, by functional characteristics coupled with a known or disclosed correlation between function and structure, or by a combination of such identifying characteristics, sufficient to show that Applicant was in possession of the claimed genus. In addition, MPEP § 2163 states that a representative number of species means that the species which are adequately described are representative of the entire genus. Thus, when there is substantial variation within the genus, one must describe a sufficient variety of species to reflect the variation within the genus.

There is no structural limitation with regard to the members of the genus of nucleic acids encoding the domains required in the claims. While the specification in the instant application discloses the structure of the BpmI endonuclease-methylase fusion protein and the BpmI methylase, and the specification refers to three additional type IIG endonucleases (AcuI, BsgI and ThaIV) which can be manipulated to create a chimeric type IIG endonuclease, the specification is silent with regard to the structural features required in any cleavage domain, methylase domain, and specificity domain of a type IIG restriction endonuclease, such that when these domains are combined as required by the claims, one could obtain a functional type IIG chimeric restriction endonuclease that can be made in any transformed host cell as required by the claims.

The claims encompass a large genus of nucleic acids which are structurally unrelated. A sufficient written description of a genus of nucleic acids may be achieved by a recitation of a representative number of nucleic acids defined by their nucleotide sequence or a recitation of structural features common to members of the genus, which features constitute a substantial portion of the genus. However, in the instant case, there is no structural feature recited. While one could argue that the structures of the type IIG restriction endonucleases known in the prior art and those disclosed in the specification are representative of the structure of all the proteins encoded by the genus nucleic acids recited, it is noted that the art teaches several examples of how even small structural variability can lead to unexpected changes in function. For example, Witkowski et al. (Biochemistry 38:11643-11650, 1999) teach that one conservative amino acid substitution transforms a β-ketoacyl synthase into a malonyl decarboxylase and completely eliminates β-ketoacyl synthase activity. Seffernick et al. (J. Bacteriol. 183(8):2405-2410, 2001) teach that two naturally occurring *Pseudomonas* enzymes having 98% amino acid sequence identity catalyze two different reactions: deamination and dehalogenation, therefore having different function. In addition, BpmI was not originally disclosed by Applicant as a type IIG endonuclease. Parent cases 10/150,028 and 09/693,146 disclose BpmI as a type IIF endonuclease.

Clearly, the structural features associated with each of the domains of a type IIG restriction endonuclease are not well defined such that one could easily recognize and differentiate between a type IIG restriction endonuclease and other type II restriction endonucleases. It is also noted that it is unclear from the specification and/or the art whether all type IIG restriction endonucleases have gamma type methylase domains, and which are the structural features associated with such methylase domains. As indicated above, while the teachings of Malone regarding gamma methylases are acknowledged, there is no clear indication as to which are the structural features associated with each of the motifs suggested by Malone. See, Claim Rejections under 35 USC 112, second paragraph for discussion of the motifs suggested by Malone. Therefore, in view of the teachings of the art, Applicant's initial annotation of BpmI as a type IIF restriction endonuclease, and lack of information correlating structure with activity, one cannot reasonably conclude that the structures disclosed are representative of all the DNAs recited.

Due to the fact that the specification only discloses a single chimeric type IIG restriction endonuclease, as well as the lack of description of any additional species by any relevant, identifying characteristics or properties, one of skill in the art would not recognize from the disclosure that Applicant was in possession of the claimed invention.

29. Claims 1-3, 6-13, 15-16 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a method for creating a functionally active chimeric type IIG restriction endonuclease in a transformed host cell by combining the catalytic, methylase, and specificity domains of restriction endonucleases BpmI, BsgI, ThaIV and AcuI, does not reasonably provide enablement for creating a functionally active chimeric type IIG restriction endonuclease in a transformed host cell by combining any cleavage/methylase/specificity domains of any type IIG restriction endonucleases. The specification does not enable any person skilled in the art to which it pertains, or with

which it is most nearly connected, to make and/or use the invention commensurate in scope with these claims.

Factors to be considered in determining whether undue experimentation is required are summarized in *In re Wands* (858 F.2d 731, 737, 8 USPQ2nd 1400 (Fed. Cir. 1988)) as follows: (1) quantity of experimentation necessary, (2) the amount of direction or guidance presented, (3) the presence and absence of working examples, (4) the nature of the invention, (5) the state of prior art, (6) the relative skill of those in the art, (7) the predictability or unpredictability of the art, and (8) the breath of the claims. The factors which have lead the Examiner to conclude that the specification fails to teach how to make and/or use the claimed invention without undue experimentation, are addressed in detail below.

The breath of the claims. Claims 1-3, 6-13, 15-16 are so broad as to encompass a method of creating functionally active chimeric type IIG restriction endonucleases in a transformed host cell, wherein said method requires DNAs encoding cleavage domains, gamma methylase domains, and specificity domains of any type IIG restriction endonuclease. See Claim Rejections under 35 USC 112, second paragraph, for claim interpretation.

The enablement provided is not commensurate in scope with the claims due to the extremely large number of DNAs encoding domains of unknown structure recited in the claims. In the instant case, the specification enables a method for creating a functional chimeric type IIG restriction endonuclease in a transformed host cell by combining the catalytic, methylase, and specificity domains of restriction endonucleases BpmI, BsgI, ThaIV and AcuI.

The amount of direction or guidance presented and the existence of working examples. The specification discloses the creation of a single chimeric type IIG restriction endonuclease as a working example. However, the specification fails to disclose the structures of other DNAs encoding the required domains from other type IIG restriction endonucleases, or the structural features required in any cleavage/methylase/specificity domain from a type IIG restriction endonuclease as required by the claims.

The state of prior art, the relative skill of those in the art, and the predictability or unpredictability of the art: The nucleotide sequence of the coding region of a nucleic acid determines the structural and functional properties of a protein encoded by said nucleic acid. In the instant case, neither the specification nor the art provide a correlation between structure and activity such that one of skill in the art can envision the structure of any DNA encoding the cleavage, methylase and specificity domain of any type IIG restriction endonuclease. In addition, the art does not provide any teaching or guidance as to (1) the structural features required in any cleavage/methylase/specificity domain of any type IIG restriction endonuclease, (2) the structural features found in those type IIG restriction endonucleases known in the prior art that are required in any cleavage/methylase/specificity domain as required by the claims, or (3) the general tolerance of type IIG restriction endonucleases to structural changes and the extent of such tolerance. The art clearly teaches that changes in a protein's amino acid sequence to obtain the desired activity without any guidance/knowledge as to which amino acids in a protein are required for that activity is highly unpredictable. At the time of the invention there was a high level of unpredictability associated with altering a polypeptide sequence with an expectation that the polypeptide will maintain the desired activity. For example, Branden et al. (Introduction to Protein Structure, Garland Publishing Inc., New York, page 247, 1991) teach that (1) protein engineers are frequently surprised by the range of effects caused by single mutations that they hoped would change only one specific and simple property in enzymes, (2) the often surprising results obtained by experiments where single mutations are made reveal how little is known about the rules of protein stability, and (3) the difficulties in designing *de novo* stable proteins with specific functions. The teachings of Branden et al. are further supported by the teachings of Witkowski et al. (Biochemistry 38:11643-11650, 1999) and Seffernick et al. (J. Bacteriol. 183(8):2405-2410, 2001) already discussed above, where it is shown that even small amino acid changes result in unpredicted enzymatic activity changes. Furthermore, Applicant first annotated BpmI as a type IIF restriction endonuclease prior to filing of the instant application.

The quantity of experimentation required to practice the claimed invention based on the teachings of the specification. While methods of generating or isolating variants of a nucleic acid were known in the art at the time of the invention, it was not routine in the art to screen by a trial and error process for any number of nucleic acids and determine which ones encode type IIG restriction endonucleases. In the absence of (1) a rational and predictable scheme for selecting DNAs having the desired activity, and/or (2) a correlation between structure and type IIG restriction endonuclease activity, one of skill in the art would have to test an essentially infinite number of DNAs to determine which ones have the recited activity. While enablement is not precluded by the necessity for routine screening, if a large amount of screening is required, as is the case herein, the specification must provide a reasonable amount of guidance with respect to the direction in which the experimentation should proceed so that a reasonable number of species can be selected for testing. In view of the fact that such guidance has not been provided in the instant specification, it would require undue experimentation to enable the full scope of the claims.

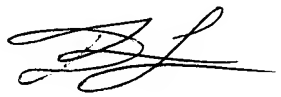
Therefore, taking into consideration the extremely broad scope of the claims, the lack of guidance, the amount of information provided, the lack of knowledge about a correlation between structure and function, the high degree of unpredictability of the prior art in regard to structural variability and how it affects function, one of ordinary skill in the art would have to go through the burden of undue experimentation in order to practice the claimed invention. Thus, Applicant has not provided sufficient guidance to enable one of ordinary skill in the art to make and use the invention in a manner reasonably correlated with the scope of the claims.

Conclusion

30. No claim is in condition for allowance.

31. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PMR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

32. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Delia M. Ramirez whose telephone number is (571) 272-0938. The examiner can normally be reached on Monday-Friday from 8:30 AM to 5:00 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dr. Ponnathapura Achutamurthy can be reached on (571) 272-0928. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (571) 272-1600.



Delia M. Ramirez, Ph.D.
Primary Patent Examiner
Art Unit 1652

DR
July 12, 2007